

## Preface

The second GALA Conference was held during October 23–25 at the Dassault Systèmes (Paris). The Serious Games Society supported and organized the conference along with the Games and Learning Association, the Network of Excellence on Serious Games funded by the European Union under the Seventh Framework Programme. The conference has been devoted to Serious Games (SGs) and aimed at gathering, building, and nurturing an expert community on SGs which involves academic, industrial developers, teachers, and corporate decision makers, to promote knowledge share, technology transfer, and business development. SGs aim at improving learning processes by providing attractive, motivating, and effective tools. So far, effectiveness of SGs has been shown by recent studies (e.g., [1, 2]), but the potential of SGs in education is still far to be fulfilled. Furthermore, there is a growing need for scientific and engineering methods and tools for efficiently building games as means that provide effective learning experiences (e.g., [3–5]). An effective application of SGs for education and training demands appropriate metrics, analytics, tools, and techniques for in-game user assessment. This can be achieved in particular by measuring elements such as learning outcomes and engagement, considering the twofold nature of SGs as compelling games that achieve precise educational goals (e.g., [6, 7]). Recent technological advances have brought what was once expensive, specialized Human–Computer Interaction (HCI) equipment located in research labs, to our family rooms and classes at an affordable cost. Devices such as stereo cameras, eye trackers, tablets and smartphones, pointing devices, motion sensors, sensors related to the central and peripheral nervous systems (e.g., galvanic skin response, heart rate, neuronal activity) [8, 9], amongst others, not only provide innovative interaction methods and techniques, but also present opportunities to develop innovative solutions for continuous user monitoring and assessment (e.g., [10–12]). All in all, design of SGs is a very complex activity, involving different constraints, targets, and disciplines, which is being investigated but is still far from maturity [13–15]. This book reports the studies presented during the conference, addressing the above-mentioned call for paper indications. The book is divided into two parts. The first and main part includes three SG research tracks: design, technology, and application. The second part reports the results of the Workshop “Acquiring 21st Century Skills: gaining insight in the design and applicability of a serious game with 4C-ID” and presents short papers describing the posters exhibited during the conference.

The first research track is dedicated to SG design. The first paper describes the gamification process in a safety and energy-efficiency application context, while the second describes a location-based SG for promoting citizens' preparedness to flooding situations. The third article presents two case studies of SGs for supporting music research, while the fourth gives an overview of the conceptual development and technical implementation of an early staged prototype combining a business simulation and an SG. Learning analytics (LA) are discussed in the next two papers, the first paper devoted to a practical experience on using LAs in educational games and the second

stressing the importance of the game log files for developing LAs. The last paper of the track deals with the relationship between entertainment games and SGs and what SG designers may learn from entertainment game design. The second research track is devoted to the technology applied in SGs. The first paper presents an accessible multiplatform game engine for a new version of the eAdventure educational game authoring platform. The second paper proposes an agent paradigm as a methodological tool to guide the design of SGs in the social field. The next article presents the F1 game, used to demonstrate how learning takes place in the domain of the Formula 1. An additional paper shows the learning path for solving learning difficulties in the use of money and other basic business activities by kids with cognitive disabilities. Two studies deal with significant enabling technologies. The Haptic technology is presented as a provider of a physical control layer that could enhance the immersion of virtual reality. Voice emotion recognition, on the other hand, is presented in the context of improving learning through webcams and microphone. The flow experience and how it can facilitate the game evaluation and design process is discussed in another paper, while the last article in the track presents the perspective of executive functions and discusses how they can help provide a more coherent approach to understanding the cognitive benefits of playing games. The third track of the research part is dedicated to SG applications. The first paper presents a business simulation game with an agent-based deliberative model of consumer behavior, while second paper deals with the evaluation of team collaboration in digital entertainment games. A cultural heritage application is considered in the next paper, presenting the key features, design solutions, and game mechanics of the Fort Ross Virtual Warehouse SG, while a subsequent study presents a Game-Based Learning MOOC for entrepreneurship. A case study presents how to deal with cultural awareness in a game concerning deployment of troops in Afghanistan. Another study provides a handy toolkit for evaluating the effectiveness of a SG for cultural awareness and heritage. The next paper investigates the gambling interactive experience, understanding how games of chance are structured and how they are related to cognitive errors and biases that occur in both frequent and infrequent gamblers. Another article describes a player-specific conflict handling ontology. The last paper in the track presents a compelling case for the use of games as a method for carrying out useful computational work by players in order to define new tools for designing SGs.

The second part of the book starts with the presentation of a workshop exploring how a widely applied instructional design model, 4C-ID, can ease the uptake of SGs by offering teachers a model fitting their background to assess games on the applicability in their learning contexts. The final part of the book collects short papers describing the exhibited posters, addressing a wide range of topics, from user profiling to knowledge convergence measure and from design to description of new SGs in different application fields.

In summary, as the above description may have shown, we are confident that a variety of stakeholders in the field of SGs—industrial developers, researchers, teachers, corporate decision makers, etc.—may find in this book a rich material for their work and inspiration for their activities.

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